



# Microsoft

**AZ-400**

Microsoft Azure DevOps Solutions  
**QUESTION & ANSWERS**

## QUESTION 1

| Case Study    | Number of Questions | Total Question |
|---------------|---------------------|----------------|
| Case Study: 1 | 9                   | 1 – 9          |
| Case Study: 2 | 10                  | 10 – 19        |
| Case Study: 3 | 271                 | 20 - 290       |
|               | Total               | 290            |

# Case Study: 1

## Litware, Inc.

### Overview

### Architectural Issues

### Requirements

### Technical Requirements

### Current Technical

### Overview

### Existing Environment

Litware, Inc. an independent software vendor (ISV) Litware has a main office and five branch offices.

### Application Architecture

The company's primary application is a single monolithic retirement fund management system based on ASP.NET web forms that use logic written in VB.NET. Some new sections of the application are written in C#.

Variations of the application are created for individual customers. Currently, there are more than 80 have code branches in the application's codebase.

The application was developed by using Microsoft Visual Studio. Source code is stored in Team Foundation Server (TFS) in the main office. The branch offices access of the source code by using TFS proxy servers.

### Architectural Issues

Litware focuses on writing new code for customers. No resources are provided to refactor or remove existing code. Changes to the code base take a long time, AS dependencies are not obvious to individual developers.

Merge operations of the code often take months and involve many developers. Code merging frequently introduces bugs that are difficult to locate and resolve.

Customers report that ownership costs of the retirement fund management system increase continually. The need to merge unrelated code makes even minor code changes expensive.

## Requirements

### Planned Changes

Litware plans to develop a new suite of applications for investment planning. The investment planning Applications will require only minor integration with the existing retirement fund management system.

The investment planning applications suite will include one multi-tier web application and two iOS mobile applications. One mobile application will be used by employees; the other will be used by customers.

Litware plans to move to a more agile development methodology. Shared code will be extracted into a series of packages.

Litware has started an internal cloud transformation process and plans to use cloud based services whenever suitable.

Litware wants to become proactive in detecting failures, rather than always waiting for customer bug reports.

### Technical Requirements

The company's investment planning applications suite must meet the following technical requirements:

- \* New incoming connections through the firewall must be minimized.
- \* Members of a group named Developers must be able to install packages.
- \* The principle of least privilege must be used for all permission assignments
- \* A branching strategy that supports developing new functionality in isolation must be used.
- \* Members of a group named Team leaders must be able to create new packages and edit the permissions of package feeds
- \* Visual Studio App Center must be used to centralize the reporting of mobile application crashes and device types in use.
- \* By default, all App Center must be used to centralize the reporting of mobile application crashes and device types in use.
- \* Code quality and release quality are critical. During release, deployments must not proceed between stages if any active bugs are logged against the release.
- \* The mobile applications must be able to call the share pricing service of the existing retirement fund management system. Until the system is upgraded, the service will only support basic authentication over HUPS.

\* The required operating system configuration for the test servers changes weekly. Azure Automation State Configuration must be used to ensure that the operating system on each test servers configured the same way when the servers are created and checked periodically.

## Current Technical

The test servers are configured correctly when first deployed, but they experience configuration drift over time. Azure Automation State Configuration fails to correct the configurations.

Azure Automation State Configuration nodes are registered by using the following command.

```
Register-AzureRmAutomationDscNode
-ResourceGroupName 'TestResourceGroup'
-AutomationAccountName 'LitwareAutomationAccount'
-AzureVMName $vmname
-ConfigurationMode 'ApplyOnly'
```

## Question : 1

How should you complete the code to initialize App Center in the mobile application? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection a worth one point.

### ANSWER HERE:

```
MSAppCenter.start
( "{Your App Secret}",
  withServices:
)
```

|   |  |
|---|--|
| <input type="checkbox"/> [MSAnalytics.self,<br>[MSDistribute.self,<br>[MSPush.self, | <input type="checkbox"/> [MSAnalytics.self]<br><input type="checkbox"/> MSCrashes.self]<br><input type="checkbox"/> MSDistribute.self] |
|---|--|

### Correct Answer:

```
MSAppCenter.start
( "{Your App Secret}",
  withServices:
)
```

|   |  |
|---|--|
| <input type="checkbox"/> [MSAnalytics.self,<br>[MSDistribute.self,<br>[MSPush.self, | <input type="checkbox"/> [MSAnalytics.self]<br><input type="checkbox"/> MSCrashes.self]<br><input type="checkbox"/> MSDistribute.self] |
|---|--|

## Explanation/Reference:

Scenario: Visual Studio App Center must be used to centralize the reporting of mobile application crashes and device types in use.

In order to use App Center, you need to opt in to the service(s) that you want to use, meaning by default no services are started and you will have to explicitly call each of them when starting the SDK.

Insert the following line to start the SDK in your app's AppDelegate class in the didFinishLaunchingWithOptions method.

```
MSAppCenter.start('{Your App Secret}', withServices: [MSAnalytics.self, MSCrashes.self])
```

References: <https://docs.microsoft.com/en-us/appcenter/sdk/getting-started/ios>

## QUESTION 2

You are configuring Azure Pipelines for three projects in Azure DevOps as shown in the following table.

| Project name | Project Details   |
|--------------|---|
| Project1     | The project team provides preconfigured YAML files that it wants to use to manage future pipeline configuration changes.        |
| Project2     | The sensitivity of the project requires that the source code be hosted on the managed Windows server on your company's network. |
| Project3     | The project team requires a centralized version control system to ensure that developers work with the most recent version.     |

Which version control system should you recommend for each project? To answer, drag the appropriate version control systems to the correct projects. Each version control system may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

### Version Control Systems

Assembla Subversion

Bitbucket Cloud

Git in Azure Repos

GitHub Enterprise

### Answer Area

Project1:

Project2:

Project3:

## Correct Answer:

| Version Control Systems | Answer Area   |
|-------------------------|---|
| Assembla Subversion     | Project1: <input type="text" value="Git in Azure Repos"/> |
| Bitbucket Cloud         | Project2: <input type="text" value="GitHub Enterprise"/>  |
| Git in Azure Repos      | Project3: <input type="text" value="Bitbucket Cloud"/>    |
| GitHub Enterprise       |   |

### QUESTION 3

You are implementing an Azure DevOps strategy for mobile devices using App Center. You plan to use distribution groups to control access to releases. You need to create the distribution groups shown in the following table.

| Name   | Use  |
|--------|--|
| Group1 | Application testers who are invited by email             |
| Group2 | Early release users who use unauthenticated public links |
| Group3 | Application testers for all the apps of your company     |

Which type of distribution group should you use for each group? To answer, drag the appropriate group types to the correct locations. Each group type may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

| Answer Area                          |                              |
|--------------------------------------|------------------------------|
| <input type="text" value="Private"/> | Group1: <input type="text"/> |
| <input type="text" value="Public"/>  | Group2: <input type="text"/> |
| <input type="text" value="Shared"/>  | Group3: <input type="text"/> |

## Answer Area

|         |                       |         |         |
|---------|-----------------------|---------|---------|
| Private | <input type="radio"/> | Group1: | Private |
| Public  | <input type="radio"/> | Group2: | Public  |
| Shared  | <input type="radio"/> | Group3: | Shared  |

**Correct Answer:**

### Explanation/Reference:

<https://docs.microsoft.com/en-us/appcenter/distribution/groups>

### QUESTION 4

Your company creates a web application.

You need to recommend a solution that automatically sends to Microsoft Teams a dairy summary of the exceptions that occur m the application.

Which two Azure services should you recommend? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Microsoft Visual Studio App Center
- B. Azure DevOps Project
- C. Azure Logic Apps
- D. Azure Pipelines
- E. Azure Application Insights

**Correct Answer: C,E**

### Explanation/Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/asp-net-exceptions>

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/automate-custom-reports>

### QUESTION 5

Note: This question is part of \* series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sett might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have an approval process that contains a condition. The condition requires that releases be approved by a team leader before they are deployed.

You have a policy stating that approvals must occur within eight hours.

You discover that deployments fail if the approvals take longer than two hours.

You need to ensure that the deployments only fail if the approvals take longer than eight hours.

Solution: From Post-deployment conditions, you modify the Time between re-evaluation of gates option.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

### Explanation/Reference:

Use a gate From Pre-deployment conditions instead.

References: <https://docs.microsoft.com/en-us/azure/devops/pipelines/release/approvals/gates>

### QUESTION 6

You need to recommend an integration strategy for the build process of a Java application. The solution must meet the following requirements:

- \* The builds must access an on-premises dependency management system.
- \* The build outputs must be stored as Server artifacts in Azure DevOps.
- \* The source code must be stored in a Git repository in Azure DevOps.

Solution: Configure the build pipeline to use a Microsoft-hosted agent pool running a Linux image. Include the Java Tool Installer task in the build pipeline.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

### QUESTION 7

You have a build pipeline in Azure Pipelines.

You create a Slack App Integration.

You need to send build notifications to a Slack channel named #Development.

What should you do first?

- A. Configure a service connection.
- B. Create a service hook subscription.
- C. Create a project-level notification.
- D. Create a global notification.



**Correct Answer: B**

**Explanation/Reference:**

Create a service hook for Azure DevOps with Slack to post messages to Slack in response to events in your Azure DevOps organization, such as completed builds, code changes, pull requests, releases, work items changes, and more.

Note:

1. Go to your project Service Hooks page:

[https://{orgName}/{project\\_name}/\\_settings/serviceHooks](https://{orgName}/{project_name}/_settings/serviceHooks) Select Create Subscription.

3. Choose the types of events you want to appear in your Slack channel.

4. Paste the Web Hook URL from the Slack integration that you created and select Finish.

5. Now, when the event you configured occurs in your project, a notification appears in your team's Slack channel.

<https://docs.microsoft.com/en-us/azure/devops/service-hooks/services/slack>

**QUESTION 8**

You have several Azure virtual machines that run Windows Server 2019.

You need to identify the distinct event IDs of each virtual machine as shown in the following table.

| Name | Event ID                  |
|------|---------------------------|
| VM1  | [704,701,1501,1500, 1085] |
| VM2  | [326,105,302,301,300,102] |
| ...  | ...                       |

How should you complete the Azure Monitor query? To answer, drag the appropriate values to the correct locations. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

**ANSWER HERE:**

count()  
makelist(EventID)  
makeset(EventID)  
mv-expand  
project  
render  
summarize

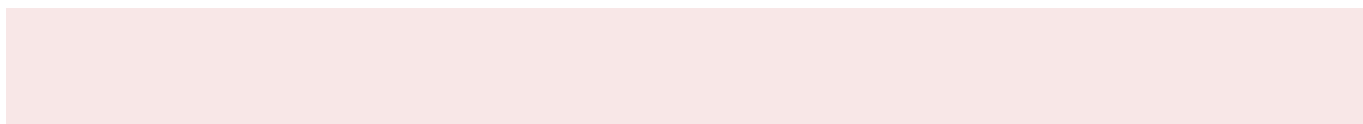
**Answer Area**

Event

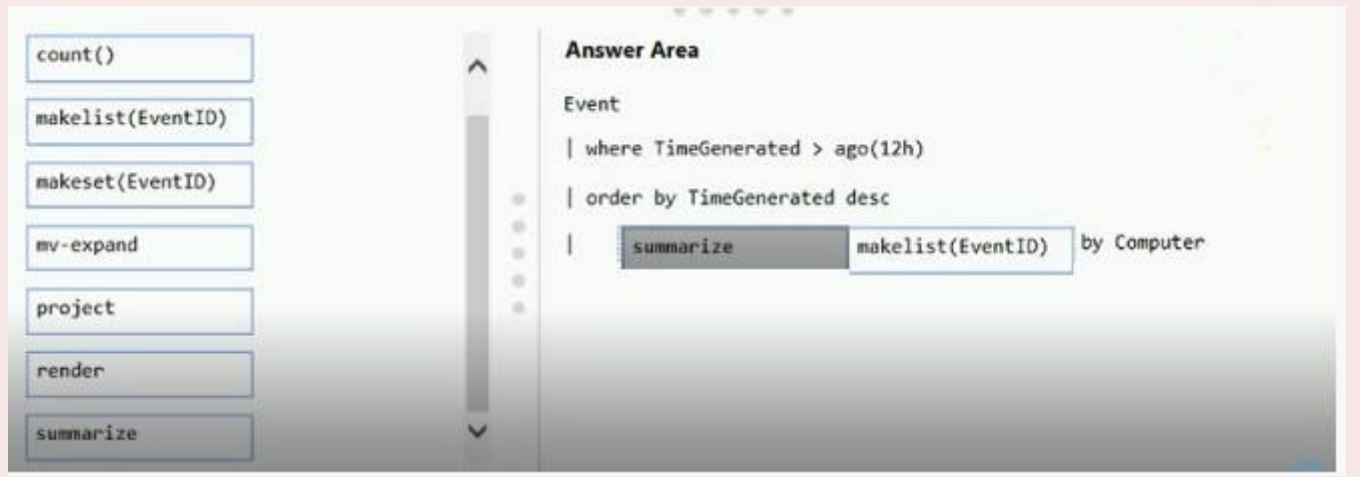
| where TimeGenerated > ago(12h)

| order by TimeGenerated desc

| Value Value by Computer



## Correct Answer:



The screenshot shows the Azure Monitor Log Query interface. On the left, there is a list of aggregation functions: count(), makelist(EventID), makeset(EventID), mv-expand, project, render, and summarize. On the right, the 'Answer Area' displays a query: Event | where TimeGenerated > ago(12h) | order by TimeGenerated desc | summarize makelist(EventID) by Computer. The 'summarize' function is highlighted in the query.

## Explanation/Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/log-query/advanced-aggregations>

## QUESTION 9

You need to configure GitHub to use Azure Active Directory (Azure AD) for authentication. What should you do first?

- A. Create a conditional access policy in Azure AD.
- B. Modify the Security settings of the GitHub organization.
- C. Create an Azure Active Directory B2C (Azure AD B2C) tenant.
- D. Register GitHub in Azure AD.

## Correct Answer: D

## Explanation/Reference:

When you connect to a Git repository from your Git client for the first time, the credential manager prompts for credentials. Provide your Microsoft account or Azure AD credentials.

Note: Git Credential Managers simplify authentication with your Azure Repos Git repositories.

Credential managers let you use the same credentials that you use for the Azure DevOps Services web portal. Credential managers support multi-factor authentication through Microsoft account or Azure Active Directory (Azure AD). Besides supporting multi-factor authentication with Azure Repos, credential managers also support two-factor authentication with GitHub repositories.

<https://docs.microsoft.com/en-us/azure/devops/repos/git/set-up-credential-managers>

## QUESTION 10

You have multi-tier application that has an Azure Web Apps front end and an Azure SQL Database back end.

You need to recommend a solution to capture and store telemetry data.

a. The solution must meet the following requirements:

- \* Support using ad-hoc queries to identify baselines.
- \* Trigger alerts when metrics in the baseline are exceeded.
- \* Store application and database metrics in a central location.

What should you include in the recommendation?

- A. Azure Application Insights
- B. Azure SQL Database Intelligent Insights
- C. Azure Event Hubs
- D. Azure Log Analytics

**Correct Answer: A**

### Explanation/Reference:

Azure Platform as a Service (PaaS) resources, like Azure SQL and Web Sites (Web Apps), can emit performance metrics data natively to Log Analytics.

The Premium plan will retain up to 12 months of data, giving you an excellent baseline ability.

There are two options available in the Azure portal for analyzing data stored in Log Analytics and for creating queries for ad hoc analysis.

References: <https://docs.microsoft.com/en-us/azure/azure-monitor/platform/collect-azurepass-posh>

### QUESTION 11

You use GitHub Enterprise Server as a source code repository.

You create an Azure DevOps organization named Contoso.

In the Contoso organization, you create a project named Project I.

You need to link GitHub commits, pull requests, and issues to the work items of Project I. The solution must use OAuth-based authentication.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

#### Actions

- From Project Settings in Azure DevOps, create a service hook subscription.
- From Organization settings in Azure DevOps, add an OAuth configuration.
- From Developer settings in GitHub Enterprise Server, register a new OAuth app.
- From Project Settings in Azure DevOps, add a GitHub connection.
- From Developer settings in GitHub Enterprise Server, generate a private key.
- From Organization settings in Azure DevOps, connect to Azure Active Directory (Azure AD).



#### Answer Area



**Correct Answer:**

| Actions   | Answer Area  |
|---|--|
| From Project Settings in Azure DevOps, create a service hook subscription.                |  |
| From Organization settings in Azure DevOps, add an OAuth configuration.                   | From Developer settings in GitHub Enterprise Server, register a new OAuth app. |
| From Developer settings in GitHub Enterprise Server, register a new OAuth app.            | From Organization settings in Azure DevOps, add an OAuth configuration.        |
| From Project Settings in Azure DevOps, add a GitHub connection+                           | From Project Settings in Azure DevOps, add a GitHub connection+                |
| From Developer settings in GitHub Enterprise Server, generate a private key.              |  |
| From Organization settings in Azure DevOps, connect to Azure Active Directory (Azure AD). |  |

### Explanation/Reference:

<https://docs.microsoft.com/en-us/azure/devops/boards/github/connect-to-github>

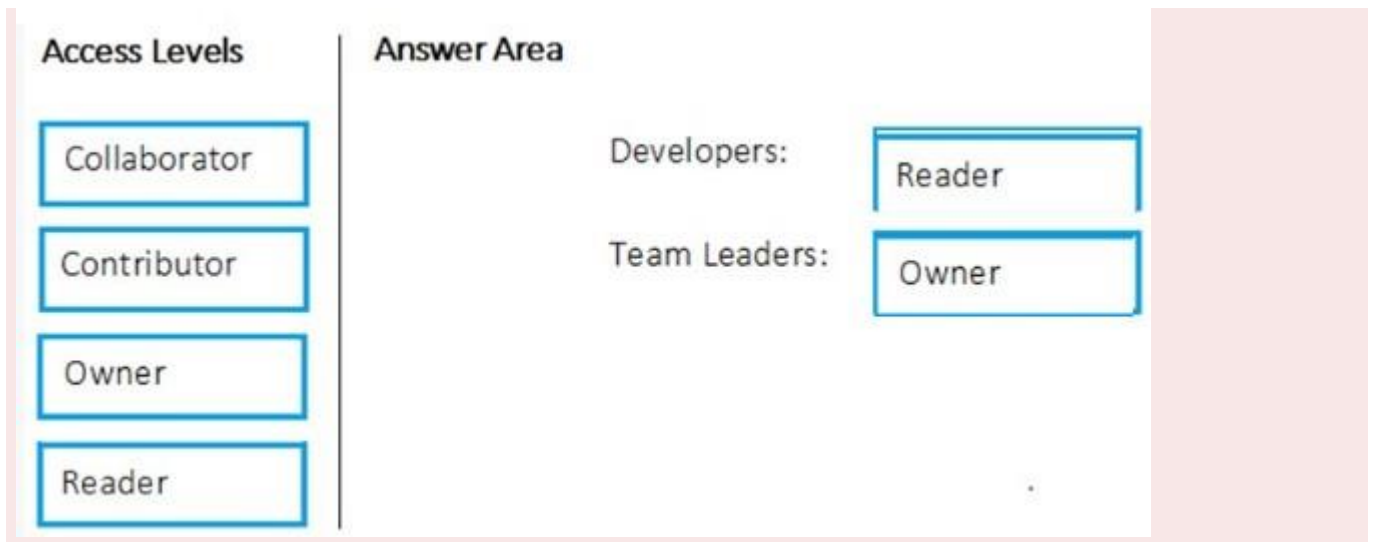
### QUESTION 12

Which package feed access levels should be assigned to the Developers and Team Leaders groups for the investment planning applications suite? To answer, drag the appropriate access levels to the correct groups. Each access level may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

| Access Levels | Answer Area                        |
|---------------|------------------------------------|
| Collaborator  | Developers: <input type="text"/>   |
| Contributor   | Team Leaders: <input type="text"/> |
| Owner         |                                    |
| Reader        |                                    |

### Correct Answer:



### Explanation/Reference:

Box 1: Reader

Members of a group named Developers must be able to install packages.

Feeds have four levels of access: Owners, Contributors, Collaborators, and Readers. Owners can add any type of identity—individuals, teams, and groups—to any access level.

Box 2: Owner

Members of a group named Team Leaders must be able to create new packages and edit the permissions of package feeds.

### QUESTION 13

You store source code in a Git repository in Azure repos. You use a third-party continuous integration (CI) tool to control builds.

What will Azure DevOps use to authenticate with the tool?

- A. certificate authentication
- B. a personal access token (PAT)
- C. a Shared Access Signature (SAS) token
- D. NTLM authentication

**Correct Answer: B**

### Explanation/Reference:

Personal access tokens (PATs) give you access to Azure DevOps and Team Foundation Server (TFS), without using your username and password directly.

<https://docs.microsoft.com/en-us/azure/devops/repos/git/auth-overview>

## QUESTION 14

You are creating a NuGet package.

You plan to distribute the package to your development team privately.

You need to share the package and test that the package can be consumed.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

### Actions

### Answer Area

Create a new Azure Artifacts feed.

Configure a self-hosted agent.

Publish a package.

Install a package.

Connect to an Azure Artifacts feed.



### Correct Answer:

**Actions**

- Create a new Azure Artifacts feed.
- Configure a self-hosted agent.
- Publish a package.
- Install a package.
- Connect to an Azure Artifacts feed.

**Answer Area**

- Configure a self-hosted agent.
- Create a new Azure Artifacts feed.
- Publish a package.
- Connect to an Azure Artifacts feed.

**QUESTION 15**

unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution

After you answer a question in this section, you will NOT be able to return to it. As a result these questions will not appear in the review screen.

You integrate a cloud-hosted Jenkins server and a new Azure DevOps deployment.

You need Azure DevOps to send a notification to Jenkins when a developer commits changes to a branch in Azure Repos.

Solution: You create a service hook subscription that uses the build completed event

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Explanation/Reference:**

You can create a service hook for Azure DevOps Services and TFS with Jenkins.

However, the service subscription event should use the code pushed event, is triggered when the code is pushed to a Git repository.

**QUESTION 16**

Your company is building a new solution in Java.

The company currently uses a SonarQube server to analyze the code of .NET solutions.

You need to analyze and monitor the code quality of the Java solution.

Which task types should you add to the build pipeline?

- A. Chef
- B. Gradle
- C. Octopus
- D. Gulp

**Correct Answer: B**

### Explanation/Reference:

SonarQube is a set of static analyzers that can be used to identify areas of improvement in your code. It allows you to analyze the technical debt in your project and keep track of it in the future. With Maven and Gradle build tasks, you can run SonarQube analysis with minimal setup in a new or existing Azure DevOps Services build task.

References:

<https://docs.microsoft.com/en-us/azure/devops/java/sonarqube?view=azure-devops>

### QUESTION 17

You manage the Git repository for a large enterprise application.

During the development of the application, you use a file named Config.json.

You need to prevent Config.json from being committed to the source control whenever changes to the application are committed.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

**ANSWER HERE:**

| Actions  |   | Answer Area |
|--|---|-------------|
| Run the <code>git commit</code> command.         |   |             |
| Run the <code>git reflow expire</code> command.  |   |             |
| Run the <code>git add .gitignore</code> command. | ➤ | ⬆           |
| Add Config.json to the .gitignore file.          | ⬅ | ⬇           |
| Delete and recreate the repository.              |   |             |

**Correct Answer:**



The screenshot shows an exam interface with two main sections: 'Actions' and 'Answer Area'. The 'Actions' section contains five items: 'Run the git commit command.', 'Run the git reflow expire command.', 'Run the git add .gitignore command.', 'Add Config.json to the .gitignore file.', and 'Delete and recreate the repository.'. The 'Answer Area' contains three items: 'Delete and recreate the repository.', 'Add Config.json to the .gitignore file.', and 'Run the git add .gitignore command.'. Navigation arrows are visible between the sections.

### Explanation/Reference:

<http://hermit.no/how-to-find-the-best-gitignore-for-visual-studio-and-azure-devops/>

<https://geohernandez.net/how-to-add-an-existing-repository-into-azure-devops-repo-with-git/>

### QUESTION 18

Your company develops a client banking application that processes a large volume of data. Code quality is an ongoing issue for the company. Recently, the code quality has deteriorated because of an increase in time pressure on the development team.

You need to implement static code analysis.

During which phase should you use static code analysis?

- A. build
- B. production release
- C. staging
- D. integration testing

**Correct Answer: D**

### QUESTION 19

You have an Azure DevOps organization named Contoso and an Azure DevOps project named Project1.

You plan to use Microsoft-hosted agents to build container images that will host full Microsoft .NET Framework apps in a YAML pipeline in Project1.

What are two possible virtual machine images that you can use for the Microsoft-hosted agent pool? Each

correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. vs2017-win2016
- B. ubuntu-16.04
- C. win1803
- D. macOS-10.13

E. vs.2015-win2012r2

**Correct Answer: A,E**

**Explanation/Reference:**

<https://github.com/microsoft/azure-pipelines-image-generation/blob/d80f81d6c98f8ce2c74b034309bb774ea8d31cfb/images/win/Vs2015-Server2012R2-Readme.md>

<https://github.com/actions/virtual-environments/blob/master/images/win/Windows2016-Readme.md>

**QUESTION 20**

You have an Azure subscription that contains an Azure Active Directory (Azure AD) tenant. You are configuring a build pipeline in Azure Pipelines that will include a task named Task1. Task1 will authenticate by using an Azure AD service principal. Which three values should you configure for Task1? Each correct answer presents part of the solution. NOTE: Each correct selection is worth one point.

- A. the object ID
- B. the tenant ID
- C. the app ID
- D. the client secret
- E. the subscription ID

**Correct Answer: B,C,D**

**Explanation/Reference:**

<https://docs.microsoft.com/en-us/azure/devops/pipelines/library/connect-to-azure>

**QUESTION 21**

You are defining release strategies for two applications as shown in the following table.

| Application name | Goal  |
|------------------|---|
| App1             | Failure of App1 has a major impact on your company. You need a small group of users, who opted in to a testing App1, to test new releases of the application. |
| App2             | You need to minimize the time it takes to deploy new releases of App2, and you must be able to roll back as quickly as possible.                              |

Which release strategy should you use for each application? To answer, drag the appropriate release strategies to the correct applications. Each release strategy may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

### Release Strategies

Blue/Green deployment

Canary deployment

Rolling deployment

### Answer Area:

App1:

App2:

### Correct Answer:

#### Release Strategies

Blue/Green deployment

Canary deployment

Rolling deployment

#### Answer Area:

App1:

Canary deployment

App2:

Rolling deployment